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EXAMINER	
CUTLER, ALBERT H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/759,959	OSTROMEK ET AL.
	Examiner	Art Unit
	Albert H. Cutler	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-9,11-15 and 17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-9,11-15 and 17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communication filed on December 10, 2007. Claims 1-3, 5-9, 11-15 and 17-22 are pending in the application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-3, 5-9, 11-15 and 17-22 have been considered but are moot in view of the new ground(s) of rejection.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The "medium" of claim 13 lacks antecedent basis in the specification. It is unclear what said "medium" is referring to.

Claim Objections

4. Claim 13 is objected to because of the following informalities: Lack of clarity and precision.

5. Claim 13 recites, "wherein said medium is selected from the list consisting of: hardware". It is unclear how a medium can be selected from a list if the list only consists of one item. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1, 5, 7, 11, 13, 17, 19, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly(European Patent Application Publication EP 1,051,045) in view of Goillot et al.(US 5,936,245), hereinafter referred to as Goillot.

Consider claim 1, Daly teaches:

A method for generating an image(paragraphs 0042-0045), comprising:

Receiving light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

sensing the spectral bands at the sensor(paragraph 0042);

combining the spectral bands to generate a composite signal(The spectral bands are combined by the field to frame combiner(118), figure 8, paragraph 0042.), wherein combining the spectral bands(i.e. fields) to generate the composite signal(i.e. frame) comprises:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

However, Daly does not explicitly teach that said function causing said spectral bands to be combined uses at least one of: adding and weighted combining.

Goillot is similar to Daly in that Goillot teaches of sensing three different spectral bands via sensors, and combining the spectral bands to generate a composite signal by accessing a function of the spectral bands and multiplexing the spectral bands according to the function(See column 4, line 8 through column 6, line 34, figures 1 and 2.).

However, in addition to the teachings of Daly, Goillot teaches that said function causing said spectral bands to be combined uses at least one of weighted combining(See column 2, lines 50-52, column 3, lines 35-45, column 4, lines 30-67, column 6, lines 21-34).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the function causing the spectral bands to be combined taught by Daly use weighted combining as taught by Goillot for the benefit of being able to tailor the composite image based on the object being photographed, therefore ensuring that the composite image is qualitatively correct(Goillot, column 6, lines 21-34).

Consider claim 5, and as applied to claim 1 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical

element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 7, Daly teaches:

A system for generating an image(see figure 8, paragraphs 0042-0045), comprising:

a electro-optical element("active color filter", 84, figure 8) operable to:

receive light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

repeat the following for each spectral band associated with the light:

receive an electrical signal(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

change an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmit the spectral band to a sensor(90, see figure 8, paragraph 0042);

a sensor coupled to the electro-optical element and operable to sense the spectral bands(90, see figure 8, paragraph 0042);

an image processing module coupled to the sensor and operable to combine the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.), wherein the image processing module combines the spectral bands to generate the composite signal by:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

a display module coupled to the image processing module and operable to generate an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

However, Daly does not explicitly teach that said function causing said spectral bands to be combined is selected from a list consisting of: an adding function, a dividing function, and a weighting function.

Goillot is similar to Daly in that Goillot teaches of sensing three different spectral bands via sensors, and combining the spectral bands to generate a composite signal by accessing a function of the spectral bands and multiplexing the spectral bands according to the function(See column 4, line 8 through column 6, line 34, figures 1 and 2.).

However, in addition to the teachings of Daly, Goillot teaches that said function causing said spectral bands to be combined is selected from a list consisting of: an adding function, a dividing function, and a weighting function(See column 2, lines 50-52, column 3, lines 35-45, column 4, lines 30-67, column 6, lines 21-34. The band combination shown in column 5, lines 30-67 includes adding, dividing and weighting.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the function causing the spectral bands to be combined taught by Daly be selected from a list consisting of: an adding function, a dividing function, and a weighting function as taught by Goillot for the benefit of being able to tailor the composite image based on the object being photographed, therefore ensuring that the composite image is qualitatively correct(Goillot, column 6, lines 21-34).

Consider claim 11, and as applied to claim 7 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 13, Daly teaches:

A logic for generating an image(Paragraphs 0042-0045 describe logic for generating an image.), the logic embodied in a medium(The circuit of figure 8 is a medium which embodies the logic of paragraphs 0042-0045.) operable to:

Receive light associated with a plurality of each spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeat the following for each spectral band associated with the light:

Receive an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

change an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from

the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmit the spectral band to a sensor(90, see figure 8, paragraph 0042);

sense the spectral bands at the sensor(paragraph 0042);

combine the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.) by accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field- to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

generate an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.),

wherein said medium is selected from the list consisting of: hardware(see figure 8).

However, Daly does not explicitly teach that said function causing said spectral bands to be combined uses at least one of: adding and weighted combining.

Goillot is similar to Daly in that Goillot teaches of sensing three different spectral bands via sensors, and combining the spectral bands to generate a composite signal by accessing a function of the spectral bands and multiplexing the spectral bands according to the function(See column 4, line 8 through column 6, line 34, figures 1 and 2.).

However, in addition to the teachings of Daly, Goillot teaches that said function causing said spectral bands to be combined uses at least one of weighted combining(See column 2, lines 50-52, column 3, lines 35-45, column 4, lines 30-67, column 6, lines 21-34).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the function causing the spectral bands to be combined taught by Daly use weighted combining as taught by Goillot for the benefit of being able to tailor the composite image based on the object being photographed, therefore ensuring that the composite image is qualitatively correct(Goillot, column 6, lines 21-34).

Consider claim 17, and as applied to claim 13 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 19, Daly teaches:

A system for generating an image(see figure 8, paragraphs 0042-0045), comprising:

means for receiving light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

means for repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from

the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

means for sensing the spectral bands at the sensor(paragraph 0042);

means for combining the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.), wherein the means for combining the spectral bands(i.e. fields) to generate the composite signal(i.e. frame) comprises:

means for accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116)to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field- to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

means for multiplexing the spectral bands in accordance with the function to combine the spectral bands(Each spectral band is subjected to filtering prior to being input into the field to frame combiner(figure 8, column 11, lines 49-57). Because all of the spectral bands are filtered, and the functions of all of the spectral bands are input into the field to frame combiner(See figure 8), the field to frame combiner accesses a function of the spectral bands, and not just a spectral band. Daly, therefore, teaches accessing a function of the spectral bands(i.e. a noise reduced group of spectral bands) and multiplexing the spectral bands in accordance with the function(The noise reduced

spectral bands are multiplexed in the field to frame combiner(118), column 11, line 57 through column 12 line 3.); and

means for generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

However, Daly does not explicitly teach that said function causing said spectral bands to be combined is selected from a list consisting of: an adding function, a dividing function, and a weighting function.

Goillot is similar to Daly in that Goillot teaches of sensing three different spectral bands via sensors, and combining the spectral bands to generate a composite signal by accessing a function of the spectral bands and multiplexing the spectral bands according to the function(See column 4, line 8 through column 6, line 34, figures 1 and 2.).

However, in addition to the teachings of Daly, Goillot teaches that said function causing said spectral bands to be combined is selected from a list consisting of: an adding function, a dividing function, and a weighting function(See column 2, lines 50-52, column 3, lines 35-45, column 4, lines 30-67, column 6, lines 21-34. The band combination shown in column 5, lines 30-67 includes adding, dividing and weighting.).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the function causing the spectral bands to be combined taught by Daly be selected from a list consisting of: an adding function, a dividing function, and a weighting function as taught by Goillot for the benefit of being

able to tailor the composite image based on the object being photographed, therefore ensuring that the composite image is qualitatively correct(Goillot, column 6, lines 21-34).

Consider claim 21, and as applied to claim 1 above, Daly teaches of capturing a plurality of spectral bands, which spectral bands are part of the visible spectrum(see claim 1 rationale). However, Daly does not explicitly teach that one of said spectral bands is a spectral band of infrared light.

Goillot teaches that one of said spectral bands is a spectral band of infrared light(column 4, lines 29-31).

Consider claim 22, and as applied to claim 7 above, Daly teaches of capturing a plurality of spectral bands, which spectral bands are part of the visible spectrum(see claim 7 rationale). However, Daly does not explicitly teach that one of said spectral bands is a spectral band of infrared light.

Goillot teaches that one of said spectral bands is a spectral band of infrared light(column 4, lines 29-31).

8. Claims 2, 3, 8, 9, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Goillot as applied to claims 1, 7 and 13 above, and further in view of Wagner(US 5,528,295).

Consider claim 2, and as applied to claim 1 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different

spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 3, and as applied to claim 1 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands. Wagner is very similar to Daly in that light is passed from alens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 8, and as applied to claim 7 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 9, and as applied to claim 7 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different

spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 14, and as applied to claim 13 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure li to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 15, and as applied to claim 13 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

9. Claims 6, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Goillot as applied to claims 1, 7 and 13 above, and further in view of Handschy et al.(U.S. Patent 5,347,378).

Consider claim 6, and as applied to claim 1 above, Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, the combination of Daly and Goillot does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)).

Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of the combination of Daly and Goillot, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by the combination of Daly and Goillot to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

Consider claim 12, and as applied to claim 7 above Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure

8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, the combination of Daly and Goillot does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of the combination of Daly and Goillot, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200,

300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by the combination of Daly and Goillot to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

Consider claim 18, and as applied to claim 13 above Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced istransmitted to different devices, column 12, lines 3-5.

However, the combination of Daly and Goillot does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of the combination of Daly and Goillot, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by the combination of Daly and Goillot to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with

fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view Goillot, in view of Wagner, and further in view of Handschy et al.

Consider claim 20, Daly teaches:

A method for generating an image(paragraphs 0042-0045), comprising:

Receiving light associated with a plurality of spectral bands(A scene(i.e, light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeating the following for each spectral band associated with the light: receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e, an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e, filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

sensing the spectral bands at the sensor(paragraph 0042), the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.);

combining the spectral bands to generate a composite signal(The spectral bands are combined by the field to frame combiner(118), figure 8, paragraph 0042.); and

generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

combining the spectral bands to generate the composite signal by accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116) to produce noise free images(i.e, a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e, functions of the original images) are provided to(i.e, accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(The spectral bands are multiplexed by the field-to-frame combiner(118) in order to combine all the bands(i.e, fields) into a composite signal(i.e, frame), column, line 57 through column 12, line 5.).

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8o), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5o). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that said function causing said spectral bands to be combined uses at least one of: adding and weighted combining.

Goillot is similar to Daly in that Goillot teaches of sensing three different spectral bands via sensors, and combining the spectral bands to generate a composite signal by accessing a function of the spectral bands and multiplexing the spectral bands according to the function(See column 4, line 8 through column 6, line 34, figures 1 and 2.).

However, in addition to the teachings of Daly, Goillot teaches that said function causing said spectral bands to be combined uses at least one of weighted combining(See column 2, lines 50-52, column 3, lines 35-45, column 4, lines 30-67, column 6, lines 21-34).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have the function causing the spectral bands to be combined taught by Daly use weighted combining as taught by Goillot for the benefit of being able to tailor the composite image based on the object being photographed,

therefore ensuring that the composite image is qualitatively correct(Goillot, column 6, lines 21-34).

However, the combination of Daly and Goillot does not explicitly teach that the electro-optical element has different layers sensitive to different spectral bands, or different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of the combination of Daly and Goillot, Wagner teaches that the electro- optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Wagner also teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, seefigure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to di{ferent spectral bands as taught by Wagner in the electro-optical element taught by the combination of Daly and Goillot for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

However, the combination of Daly, Goillot and Wagner does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Handschy et al. are similar to Daly in that Handschy et al. teach of generating a frame comprising three different color bands(column 17, lines 1-59, figure 6(a)). Handschy et al. also similarly teach that current invention pertains to frame sequential color video systems(column 1, lines 17-37).

However, in addition to the teachings of the combination of Daly, Goillot and Wagner, Handschy et al. teach of receiving bands sent to a display electro-optical element(100, 200, 300, figure 1, column 6, line 16 through column 7, line 4), changing an optical property of the display electro-optical element(100, 200, 300) in response to the display electrical signal to filter for a display spectral band(column 6, lines 21-33, lines 44-46), transmitting the display spectral band to a display(The electro-optical element(100, 200, 300) is part of the display, see figure 1.), and displaying the display spectral bands at the display to generate the image(Each display spectral band is displayed for one third of the time, and the three display spectral bands combine to generate an image. Column 16, lines 50-61, column 17, lines 39-45).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the composite signal as taught by the combination of Daly, Goillot and Wagner to a display containing an electro-optical element as taught by Handschy et al. for the benefit of offering a superior performance display with fewer elements, low cost, and a simple structure(Handschy et al., column 5, lines 48-52, column 4, lines 27-32).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert H. Cutler whose telephone number is (571)-270-1460. The examiner can normally be reached on Mon-Thu (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571)-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC

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SUPERVISORY PATENT EXAMINER